

IN THE SPECIFICATION:

On page 1, before paragraph [0001], after the title, please insert the following paragraphs:

RESEARCH AGREEMENTS

The claimed invention was made by, on behalf of, and/or in connection with one or more of the following parties to a joint university-corporation research agreement: Princeton University, The University of Southern California, and Universal Display Corporation. The agreement was in effect on and before the date the claimed invention was made, and the claimed invention was made as a result of activities undertaken within the scope of the agreement.

GOVERNMENT RIGHTS

This invention was made with Government support under Contract No. F49620-00-1-0065 awarded by Air Force Office of Scientific Research. The government has certain rights in this invention.

On page 1, please delete paragraph [0002].

Please amend paragraphs [00071] to [00073] on pages 24 to 25 as follows:

[00071] It is understood that the various embodiments described herein are by way of example only, and are not intended to limit the scope of the invention. For example, many of the electrode and organic layer materials and structures described herein may be substituted with other electrode and organic layer materials and structures without deviating from the spirit of the invention. It is understood that various theories as to why the invention works are not intended to be limiting. For example, theories relating to charge transfer are not intended to be limiting.

EXAMPLES

[00072] While the present invention is described with respect to particular examples and preferred embodiments, it is understood that the present invention is not limited to these examples and embodiments. The present invention as claimed therefore includes variations from the particular examples and preferred embodiments described herein, as will be apparent to one of skill in the art.

Example 1 - OPSD Fabrication

[00073] An OPSD was fabricated on precleaned glass substrates commercially precoated with a 1500 Å-thick ITO anode obtained from Applied Films Corporation in Longmont Colorado. (P.E. Burrows, Z. Shen, V. Bulovic, D.M. McCarty, S. R. Forrest, J. A. Cronin, and M.E. Thompson, "Relationship between electroluminescence and current transport in organic hetero-junction light-emitting devices, "J. Appl. Phys., vol. 79, no. 10, pp. 7991-8006, May 1996.) A single photolithographic step was used to pattern and etch the ITO (in 5% HNO₃: 45% HCl: 50% H₂O by volume at 70° C for 5 min) into a 3 cm x 1 mm line. The ITO was then spin-coated with a 300 Å-thick film of 3, 4-polyethylenedioxythiophene:polystyrenesulfonate (PEDOT:PSS), followed by drying at 120° C for 15 min in vacuum. The PEDOT:PSS layer improves current injection into the donor-like copper phthalocyanine (CuPc) layer by lowering the Fermi level, and hence reducing the energy barrier to holes by 0.5 eV with the highest occupied molecular orbital of CuPc. (P. Peumans et al. Appl. Phys. Lett., vol. 79, no. 1, pp. 126). The polymer also serves to planarize the ITO, thereby preventing shorts through the thin donor and acceptor layers; a concern for large area devices. Subsequently, the small molecular weight films comprising the organic double heterostructure were deposited by thermal evaporation at room temperature in high vacuum ($\sim 1 \times 10^{-6}$ Torr) in the following order: a 500 Å-thick film of the preferentially hole transporting CuPc, followed by 500 Å of the electron transporting, acceptor-like 3, 4, 9, 10-perylenetetracarboxylic bis-benzimidazole (PTCBI). Next, a 100 Å-thick film of bathocuproine (BCP) was deposited. The BCP acts as an exciton-blocking layer, preventing recombination at the cathode/organic interface while also decreasing dark current and preventing damage to the PTCBI layer during metal deposition. (P. Peumans, V. Bulovic, and S. R. Forrest, "Efficient, high-bandwidth organic multilayer photodetectors," Appl. Phys. Lett., vol. 76, no. 26, pp. 3855-3857, June 2000.) Finally, an 800 Å-thick Ag layer was deposited through a shadow mask as the device cathode.